

$$63) \quad a_1 = 6 \quad d = 6 \quad a_n = 6 + (n-1)6$$

p808  
12.2  
12.2

$$a_n = 6n$$

$$b \text{ total \# of cells} = S_9 + 1$$

$$S_9 = 9 \left( \frac{a_1 + a_9}{2} \right) = 9 \left( \frac{6 + 54}{2} \right)$$

$$S_9 = 270$$

there are 271 cells  
in the honey comb.

$$64) \quad a_1 = 3 \quad d = 2$$

$$a_n = 3 + (n-1)2$$

$$a_n = 1 + 2n$$

$$S_7 = 7 \left( \frac{3 + 15}{2} \right)$$

$$S_7 = 63$$

$$65) \quad a_1 = 4 \quad d = 8$$

$$a_n = 4 + (n-1)8$$

$$a_n = -4 + 8n$$

$$b) \quad S_{12} = 12 \left( \frac{a_1 + a_{12}}{2} \right)$$

$$= 12 \left( \frac{4 + 92}{2} \right)$$

$$= 576$$

$$66) D(t) = 16t^2$$

p 808  
12, 2

a)

n	D(n)
1	$D(1) - D(0) = 16(1^2) - 16(0^2) = 16$
2	$D(2) - D(1) = 16(2^2) - 16(1^2) = 48$
3	$D(3) - D(2) = 16(3^2) - 16(2^2) = 80$
4	$D(4) - D(3) = 16(4^2) - 16(3^2) = 112$

b)  $a_1 = 16 \quad d = 32$

$$a_n = 16 + (n-1)(32)$$

$$a_n = -16 + 32n$$

c)

67)  $S_5 = 1000$

sum after 5 days

$$n = 5$$

# days to give a prize

$$d = 50$$

amt of increase each day.

$$a_n = a_1 + (n-1)d$$

$$S_5 = 5 \left( \frac{a_1 + a_5}{2} \right)$$

$$a_5 = a_1 + (5-1)50$$

$$1000 = 5 \left( \frac{a_1 + a_1 + 200}{2} \right)$$

$$a_5 = a_1 + 200$$

$$1000 \left( \frac{2}{5} \right) = 2a_1 + 200$$

$$100 = a_1$$

100 should be given the 1st day.

6B.

0.004 in thick

2" diam dowel

5" diam roll

p 809  
12.2 $n$  = # times paper is wrapped around $d_n$  = diam before  $n^{\text{th}}$  wrap $l_n$  = length added to  $n^{\text{th}}$  wrap.

$n$	$d_n$	$l_n$
1	2	$2\pi$
2	2.008	$2.008\pi$
3	2.016	$2.016\pi$
4	2.024	$2.024\pi$

$$d_2 = 2 + 0.004(1)/2 = 2.008$$

b) arithmetic  $l_n = l_1 + (n-1)d$   
 $l_n = 2\pi + (n-1)(.008\pi)$

c)  $q_1 = 2.008$   $d = 0.008$   $q_n = 5$

$$q_n = q_1 + (n-1)d$$

$$5 = 2.008 + (n-1)(.008)$$

$$3 = 0.008n$$

$$375 = n$$

375 times

length of paper =

$$l_n = [2 + (n-1) \cdot .008]\pi$$

$$l_{375} = 4.992\pi$$

$$l_1 = 2\pi$$

$$l_1 + l_{375}$$

$$S_{375} = 375 \left( \frac{2\pi + 4.992\pi}{2} \right) \approx 4118.6 \text{ in}$$